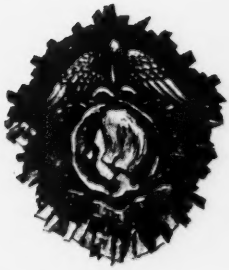
Journal of Dentistry for Children



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The President's Message

Attention is called to the article in this issue of the *Journal* regarding the Study of Child Health Services which the American Academy of Pediatrics is conducting. This article was prepared by the American Academy of Pediatrics to acquaint the members of the American Society of Dentistry for Children with the Study. As stated in the article, the American Society of Dentistry for Children and the Council on Dental Health of the American Dental Association have approved the purpose of the Study.

To provide you with additional information as to the background and purpose of the Study, the following is quoted from material received from the American Academy of Pediatrics:

"The pediatricians of the country, along with many other groups and individuals, are aware that if children are to receive the care they need in the post-war period, systematic planning to provide that care must take place. The American Academy of Pediatrics feels that the responsibility for such planning rests squarely on the physicians themselves. The several bills now before Congress indicate clearly that if the physicians do not assume this responsibility, plans for medical care will be made by others. It is essential that those who know what constitutes good care and who are engaged in rendering it be concerned with planning.

"Unfortunately, data needed as a basis for planning are incomplete, scattered, and in some fields almost totally lacking. In discussions which took place during the annual meeting of the American Academy of Pediatric Society in the Fall of 1944, it became clear that the securing of data should be the first step. Accordingly, the American Pediatric Society suggested the formation of a planning committee. This committee, of which Dr. Warren R. Sisson is now chairman, was made an official committee of the Academy and is known as the Committee for the Study of Child Health Services. All committee members are Fellows of the Academy; five are in active practice of pediatrics. The Committee prepared a report which was unanimously accepted by the Academy and which forms the basis for the Present Study. The report stated the objective, which may be considered the basic platform of the Study, as follows: *'To make available to all mothers and children in the U.S.A. all essential preventive, diagnostic and curative medical services of high quality which used in cooperation with other services for children, will make this country an ideal place for children to grow into responsible citizens.'*

"This is a fact-finding undertaking to determine what facilities and services are available for children and what kind of care children are now receiving. The data will be gathered by approved statistical methods and analyzed with the assistance of expert statisticians. At the close of the Study the material will be presented in a factual report, which will be available to all who care to use it."

State Units are urged to assist in any possible way in order to bring the dental portion of the Study to a successful completion.

Ralph L. Ireland.

Some Aspects of Caries Pathology and Their Clinical Application*

HAROLD B. YOUNGER, D.D.S.
Dallas, Texas

Editor's Note:

Paul Taylor, of our Texas Unit, tells us that Harold Younger is more of a Southophile than Senator Claghorn, of radio fame! Born in 1906, of a fifth generation of Texans, Hal has nevertheless (?!) been an active individual, having graduated from Baylor University College of Dentistry in 1927, entered private practice and in addition to outstanding success there, is Director of the Kiwanis Dental Clinic, Director of the Dental Department of the Freeman Memorial Clinic, the Children's Medical Center, Dallas, Texas. Author of numerous papers on mottled enamel and fluorine, he is also a member of the Department of Dental Research of Baylor University.

Like Jack Garner, he likes his Bourbon neat, and for recreation and entertainment, nothing better than a good mystery story!

A.E.S.

Introduction

It is true that all dentists cannot be expert pathologists. Lack of time and facilities for the study necessary to attain such an end make this impossible. It is likewise true that all dental pathologists cannot be expert dentists, for similar reasons. It is regretable that such is the case. If clinical observations are interpreted in the light of sound histo-pathological knowledge, many of the misunderstandings and mistakes which have plagued us for so long in our efforts to control dental disease may be eliminated. By the same token, many histo-pathological findings may be better understood, and far more significant, when interpreted in the light of sound clinical experience.

If we are to eliminate guess-work from our clinical approach to the caries problem, it is important that all dentists, and particularly those concerned with the care of children and youths, avail themselves of the information on histo-pathology to be found in the literature. The following discussion will attempt to correlate some of this information with clinical observations and procedures.

History

For a long time enamel was considered as nothing but a calcified material, having no organic structures. Based upon this concept, the only explanation offered for disintegration of enamel was a chemical one, the action of acid. This misconception persisted for over a hundred years and is responsible for the failure of all efforts at caries control. Even the microscopic study of carious enamel—[1,2,3,4] failed to shake this theory, the findings being explained as due to acid action, and the bacteria found in and on carious enamel were considered instrumental only through the acid which they produced. When the theory was first advanced[5] that the caries process invades and progresses through the organic structures of the enamel, and correspondingly could not be acid action, it was ignored, or dismissed as illogical. The result was that dentistry continued to follow the wrong road in its efforts to control caries. Theories of etiology and attempts at control based upon the acid concept became so complicated that the average dentist found himself floundering around in the dark, with only one ray of truth to lighten his path. That was the knowledge that a carious cavity which was thoroughly cleaned, sterilized and adequately sealed with filling, uusually remained free of caries as long as it

*Presented before the Texas Society of Dentistry for Children and the Texas Society of Orthodontists, April, 1946.

was so sealed. However, even this knowledge was not properly evaluated, and its significance was lost when an attempt was made to explain it by the prevailing caries concepts.

As far back as 1921, Gottlieb[5] showed by micro-photographs that caries would develop through a lamella into the dentin while a layer of unaffected enamel still separated the carious enamel from the carious dentin. He also differentiated between the slowly progressing form of caries, suggesting that it progresses along the narrow paths of the prism sheaths, and the acute form which progresses rapidly along the lamellae, and may involve the dentin before the whole layer of overlying enamel has been penetrated by the process. At the time he viewed the process as proteolytic. In 1942 Gotlieb and E. Hinds[6] reported the presence of yellow pigment as characteristic of the caries process, and the finding that positive bacillus acidophilus counts could be reduced, often to negative, by impregnating the tooth surfaces with highly bactericidal silver nitrate compounds.

Since that time, Gottlieb's published investigations[7,8,9,10,11] and those of others [12,13,14,15] have clearly and conclusively demonstrated the etiology pathology clinical manifestations and considerations and prophylaxis of the caries process.

The New Caries Concept

Before discussing caries it might be well to call attention to the fact that in the first stages of caries the tissue retains its histological identity. Nature shows us that such tissue can be reclaimed and arrested enamel and dentin caries represent such an occurrence. Later, necrosis develops and the tissue cannot then be reclaimed, and the cavitation results. The carious cavity represents the terminal or final stage of the carious process.[16]

Caries consists of invasion of the organic structures of the tooth by proteolytic microorganisms. This invasion is characterized by the formation of yellow pigment,[6] and is usually accompanied by signs of acid action. In the enamel these signs are chalky enamel, cloudy enamel, transverse striation and transparent enamel. In the dentin they are shrinkage, transparent dentin and increased opacity.[8] In the enamel either may spearhead, depending upon whether the micro-organisms progress along the prism sheaths, or along the lamellae.[7] When the invasion occurs along the prism sheaths, the signs of acid action precede and the yellow pigmentation follows behind. When the invasion occurs through a lamella, the yellow pigmentation reaches the dentin before the signs of acid action reach it. Having reached the dentin, the signs of acid action always precede in progressing dentin caries. If the dentin caries becomes arrested, the yellow pigmentation catches up with the signs of acid action.

It has previously been stated[6] that two different groups of micro-organisms are apparently responsible for the two different components of the caries process. The writer wishes to call attention to the fact that there are cocci which are proteolytic and also acidogenic, fermenting glucose, lactose, maltose and sucrose with the production of acid; that there are strains which produce pigment and that they produce their pigment best in the presence of oxygen; that they are facultative anerobes, and that they have a special predilection for the tissues of the osseous system.[17] When this knowledge is coupled with the information long known, that microbes found in the prisms sheaths in undermining enamel caries and in other organic structures of carious enamel and dentin are gram positive cocci, it does not seem unlikely that one or more strains of cocci will prove to be the invading microbes of caries. Upon this hypothesis we can explain the presence of pigment, the signs of acid action, the eventual necrosis of tooth tissue, the pigment preceding acid production in lamellae due to more oxygen being available in the larger openings of the lamellae, the pigment following behind in the narrow avenues of the prism sheaths and in progressing dentin caries where oxygen penetrates the prism sheaths and reaches the deeper tissue of the dentin with difficulty. Likewise this would explain the increase of caries activity in susceptible mouths when large amounts of concentrated sugars are consumed and the reverse when sugar consumption is

reduced; in fact, all the known phenomena of caries. Various strains of cocci are always present in the mouth and are notorious invaders where the opportunity presents. It is probable that other microbes enter the picture after invasion is accomplished, as occurs in many other infections in the body, and this is certainly the case after cavitation. Investigations attempting to identify the microbes involved in the process are being carried on at the present.

Since caries invades and progresses through the organic structures of enamel and dentin, it would be well to discuss these structures. Mature enamel normally consists of 95% inorganic and 5% organic material. If the organic material were homogeneously distributed through the enamel, it probably could not be invaded. However, due to developmental reasons, it is found in strands of various diameters which may offer avenues of bacterial invasion through areas of almost entirely calcified tissue. The organic structures of enamel are lamellae, tufts and prism sheaths.

In the formation of enamel we first have ameloblasts forming uncalcified pre-enamel.[18] Secondly, there occurs the first calcification resulting in formation of the homogeneous matrix. In the third phase occurs differentiation of the prisms by their additional calcification and in the fourth, final maturation of the enamel.[19]

The prism sheaths, which remain in the early matrix stage, are less calcified than the surrounding material and have been shown to have some tissue fluid circulation. The tufts, which likewise remain in early matrix stage, are arranged in groups and fix the enamel to the dentin. The lamellae apparently have no physiological purpose but are products of particular developmental conditions. They were first described by C. F. W. Boedecker,[20] and later by C. F. Boedecker.[21] They considered these structures, along with the prism sheaths and tufts, to be channels for fluid circulation in the enamel. Gottlieb[5] described them as cracks in the calcifying enamel into which surrounding tissue has penetrated, thus ex-

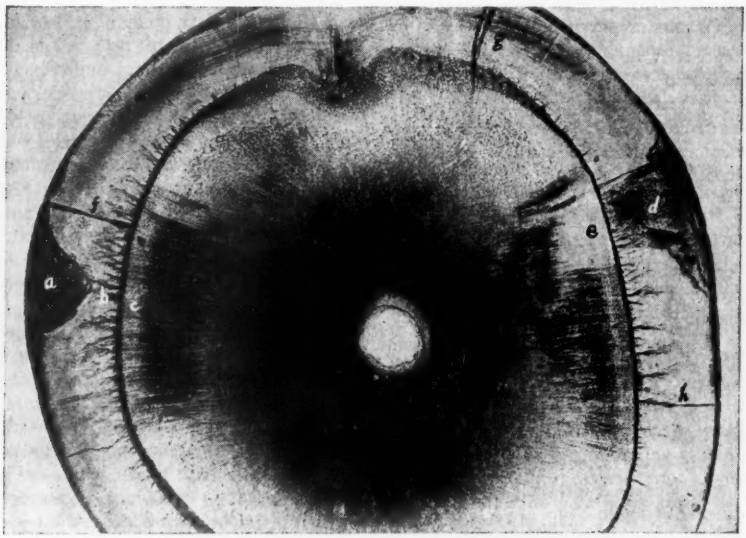

Figure 1. Horizontal ground section through two brownish discolored but intact areas. Frontal caries at (a) has reached the tufts (b) but has not yet reached the dentin (c). Frontal caries at (d) has reached the dentin at (e). Lamellae at (f, g, h) show no involvement.

plaining the extension of some lamellae into the dentin. Baumgartner[22] and Orban[23] showed groups of prisms remaining in the matrix stage creating another kind of lamella. Together with the other organic matter of the enamel, they play an important part in the development and spread of caries.

Dentin and cementum normally contain 65-70% inorganic and 30-35% organic matter. The organic structures of dentin are the dentinal fibers and the circulating tissue fluid.

Gottlieb[8] has classified caries according to the method of invasion of micro-organisms. Only the prism sheaths or lamellae may be attacked from the enamel surface. If the narrow prism sheaths are invaded, the deeper the microbes penetrate, the more tortuous becomes their path and more difficult becomes their progress, and the process becomes cone shaped with the tip of the cone toward the dentin. This type of caries he calls *frontal* (Fig. 1). If such an invasion encounters a layer of transparent enamel, it cannot progress farther and becomes an *arrested enamel caries*. If, however, frontal caries reaches the tufts, it quickly proceeds to the dentino-enamel junction, spreads laterally, and the *first form of undermining caries* develops (Fig. 2).

If a lamella is present in an area of frontal caries, or if a lamella is the point of original invasion, the microbes progress along the lamella and may quickly reach the dentino-enamel junction, and the *second form of undermining caries* develops.

It has been shown[24] that lamellae are few at the greatest circumference of a tooth, but appear in increasing numbers cervically, and are found more on the buccal and lingual surfaces. Invasion of lamellae is far easier than invasion of the narrow and progressively crooked prism sheaths. Invasion of either is facilitated by protection of the point of entry of the microbes, as it found in retention areas, and frontal caries is found only in protected areas, interproximally or at the gingival margins. Lack of cleanliness is a form of protec-

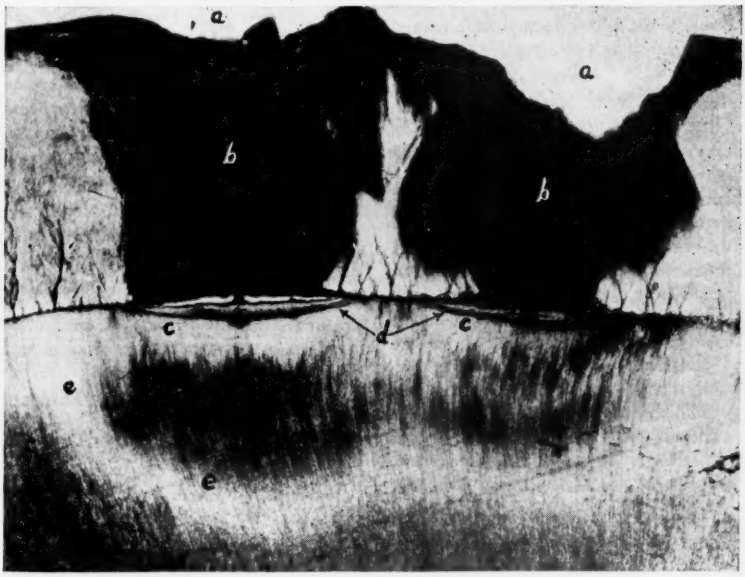

Figure 2. Ground section through brownish area in intact enamel surface. Some enamel was lost in grinding (a). Frontal caries (b) has reached the dentin (c), and has caused shrinkage (d). A barrier is forming at (e). (Gottlieb and Stanton 11).

tion, although unclean teeth *may* be immune and clean ones susceptible. Where caries develops on a scoured cusp or other naturally cleansed area, it is probable that a lamella is always the point of entry.[8]

If caries invades at the cemento-enamel junction the highly calcified enamel resists more than the adjoining dentin, and the *third form of undermining caries* develops.

When dentin or cementum are exposed as the surface structure and become carious, they are attacked by frontal caries only. Being less calcified than enamel they are more subject to invasion of microbes, and being homogeneously formed, undermining caries cannot develop in them.[8]

When caries reaches the dentin, either by way of the organic structures of the enamel, through the cementum, or initially as in exposed dentin, it progresses rapidly along the highly organic roads, and, unless arrested, soon reaches the pulp. As previously stated, in progressing dentin caries, signs of acid action precede and the yellow pigmentation follows, probably due to lack of oxygen in the depths of the dentin. If the dentin caries is arrested, the pigmentation catches up with the signs of acid action.

There are two kinds of *arrested dentin caries. Externally arrested dentin caries* occurs when the affected dentin is exposed if improvement in the quality of the saliva after the caries has begun results in deposition of calcium salts into the dentinal tubules. We cannot explain the mechanism of this deposition, but can only surmise that it is a loose deposition, not forming a tight chemical combination, and that it eliminates the living place for microbes. At any rate when it occurs, the signs of bacterial activity, yellow pigmentation and acid production disappear, the necrotic material is discarded and the softened dentin becomes hard and glossy.

Internally arrested dentin caries differs from the externally arrested type in two ways. Toward the surface there is a necrotic area located in a cavity, in some cases entirely covered by enamel, in others protected by overhanging margins. When invading microbes produce a moderate amount of acid in dentin which is separated from the outside, the calcium salts which are dissolved from the dentin by the acid dissipate into the periphery and are reprecipitated there. These calcium salts do not come from the saliva but from the affected dentin, and when they are precipitated around the caries lesion they obstruct the tubules against further bacterial invasion by producing a hard, hypercalcified barrier (Fig. 2). If, however, the acid produced by the microbes is in such quantity that it cannot be neutralized by the tooth tissue, no barrier of hypercalcification forms and the caries process proceeds toward and may reach and involve the pulp.

In clinical examination we are dependent upon findings made with the eye and explorer and upon radiographic evidence for diagnosis. The eye and explorer can reveal surface evidence of invasion as well as necrosis and cavitation, but cannot reveal whether caries is active or arrested under an intact enamel surface. The x-ray will disclose the phenomena of acid action on dentin, shrinkage and decalcification (Fig. 3).

Frontal caries of enamel appears clinically as a brownish yellow area on the enamel before cavitation occurs. Such an area may be an arrested caries, and if so may remain as such indefinitely. Only after the process reaches the dentin can it be diagnosed as caries in the x-ray.

An invaded lamella will appear as a dark brownish grey spot in a small, round depression. As a rule such lamellae run directly to the dentin and we can assume that caries has already reached the dentin when such a finding is made. Radiographic evidence or cavitation will disclose this condition.

Dental caries can be diagnosed when cavitation has occurred, or when the enamel surface is clinically intact by evidence of dentin declacification shown in the x-ray. Whether or not it is an arrested dentin caries must be determined by clinical examination. Externally arrested dentin caries can be diagnosed when the exposed dentin surface shows a tissue loss from the caries process and is yellowish brown, hard, and glossy. Internally arrested dentin caries can be diagnosed when, after removing the overlying enamel and necrotic

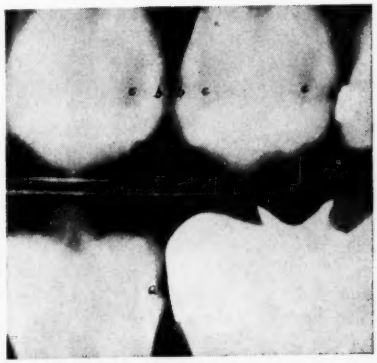

Figure 3. Bitewing film. On the distal side of the lower second bicuspid (a) there is an enamel defect but no dentin involvement, which may be an arrested enamel caries. On the distal of the upper first bicuspid and on the mesial and distal of the upper second bicuspid there are shadows in the enamel (b) and extreme shadows in the dentin (c) at the dentino-enamel junction. These areas are carious cavities. (Gottlieb 16).

material, we find a hard, yellowish dentin surrounding and walling off the area.

Caries Immunity and Control

Caries prevention and control are primarily dependent upon the immunity of susceptibility of tooth tissue to bacterial invasion. It is necessary to differentiate between immunity as it is spoken of in connection with the resistance of the body to infection, and as we consider it in connection with the resistance of tooth tissue to bacterial invasion. Systemic immunity is dependent upon various physiologic, metabolic and environmental factors and upon the presence of antibodies in the tissues of the body. Immunity of the tooth surface to bacterial invasion is dependent upon non-availability of suitable organic matter for invasion.

Caries immunity has been classified[15] as pre-eruptive, or developmental, and post-eruptive, or acquired. Pre-eruptive immunity of the enamel surface occurs when the enamel surface is homogeneously calcified to such a degree that bacteria have insufficient organic matter available for invasion. Such a condition is best exemplified by the transparent enamel surface found on some teeth from fluorine areas. This homogeneous hypercalcification of the enamel surface is one of the phenomena of fluorine which accounts for the lower incidence of caries reported from such areas. However, lamellae seem not to be affected by such pre-eruptive hypercalcification (Fig. 4).

Acquired immunity has been further classified[15] as natural and artificial. Natural acquired immunity may be produced by deposition into the tooth surface of calcium salts present in the saliva thereby blocking by calcification the organic entrances of the lamellae and prism sheaths and rendering them uninvadeable. There is possibly present in caries-immune persons, and not present in caries-susceptible persons, an unknown factor which governs this deposition. Reports found in the literature show no significant statistical differences in the calcium and phosphorus content or rate of flow of the saliva of caries immune and caries susceptible persons. It is hoped that further investigation may determine what this factor is and shed additional light on *natural acquired caries immunity*.

Artificial acquired immunity may be produced by impregnating the tooth surface with drugs which produce an insoluble deposit. This deposit must be of such nature as to completely seal and block the organic entrances against bacterial invasion, and greater benefit will be derived if the drug used sterilizes and produces a bactericidal compound with the organic matter. Another phenomenon of fluorine which may account for lowered caries incidence in fluorine areas comes under the heading of artificial acquired immunity. In drinking water containing sodium fluoride, the organic entrances of the lamellae and prism sheaths may become fluorinized. The attraction between calcium and fluorine is extremely strong, being greater than that between iron and oxygen. The fluorinized organic matter then attracts calcium from the saliva and surrounding tooth structure, and forms insoluble calcium fluoride, to some degree obstructing the openings. The reported lowering of caries incidence following topical application of sodium fluoride solutions to the teeth can be explained in the same manner.

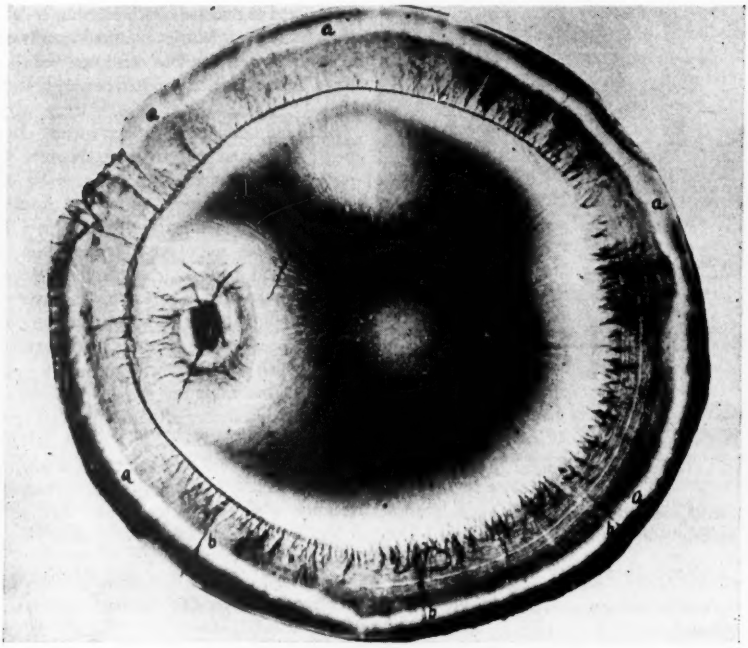

Figure 4. Horizontal ground section through mottled tooth from fluorine area. A belt of transparent enamel (a) completely surrounds the tooth, at or near the surface. Numerous lamellae (b) pass through this belt.

Gottlieb and Hinds[6] reported in 1942 that bacillus acidophilus counts could be reduced, often to zero, by impregnating the surfaces of the clinical crowns with silver nitrate compounds. The writer reported in 1944[15] the results of experiments with these drugs at Freeman Clinic, in which caries incidence of 25 treated mouths was reduced to one-tenth that of 5 untreated controls, over a period of 16 months. The treated mouths were reimpregnated one time between June and September, 1944, and a year later 21 of the treated cases which could be obtained for examination showed 14 new cavities, an average of .66 new cavities per child, while 4 of the untreated control group had 20 new cavities, an average of 5 new cavities per child. It will be noted that both groups had a slightly higher caries incidence the second year, which may be due to the eruption of new tooth surfaces during this period, the children being between six and thirteen years of age.

A second experimental group was started in August, 1944. For this experiment twenty-seven children between the ages of eight and thirteen years were used. No bacillus acidophilus counts were made on this group, but only mouths having eight or more carious cavities were studied. The upper right and lower left quadrants in all mouths were impregnated with the same drugs previously used. The upper left and lower right quadrants were untreated and used as controls. After one year, examination of 20 of the group showed 4 new cavities in the treated quadrants or .2 new cavities per child, and 39 new cavities in the untreated quadrants, or 1.95 new cavities per child. Since the figures are for half mouths, multiplying the averages by two gives an average of .4 new cavities per

mouth in the treated, and 3.9 new cavities per mouth in the untreated cases, for comparison with the first group. These results are consistent with those obtained in the first group. The slightly lower caries incidence throughout the second group may be due to the fact that no effort was made to select bacillus acidophilus positive cases for the second experiment and some of the cases may not have been caries susceptible at the time. In fact, three of the children examined showed no new caries in either the treated or untreated quadrants.

These studies on fifty-seven children with highly carious mouths indicate that impregnation of the tooth surfaces with drugs having a strong bactericidal action, and which seal and block the organic entrances with an insoluble deposit may reduce caries incidence 90 per cent. Further observations will be made of both these groups, and other drugs are presently being tested.

At this point it might be well to mention the role played by the concentrated sugars in the caries problem. Gottlieb states[6]—"It is an old and proved fact that ingestion of carbohydrates, especially sugar, promotes dental caries in susceptible people." It is also probably undisputed that caries-immune people can eat unlimited quantities of sugar without alteration of their caries immunity.

The following explanation is suggested. Caries immunity means that the organic roads are obstructed and no micro-organisms can invade. Neither can sugar penetrate the organic roads in these cases. In caries susceptibility, the roads are invadeable. Sugar sweetens these roads and improves the living conditions for the micro-organisms. The suggested impregnation by some factors of the saliva cannot take place as long as the roads are occupied by sugar. That might be the explanation, by Jay, (personal communication to the author) that after eliminating sugar from the diet for some time, some people can return to sugar without showing a new rise of the acidophilus count. The lamellae, emptied of sugar, can become obstructed by natural impregration, provided the saliva has been favorably changed. A return to sugar can do no more harm because the roads are obstructed. Those, however, who did not get a favorable change in the saliva quality while the sugar was eliminated from the diet again have high acidophilus counts; i.e., as soon as the living conditions of the micro-organisms on the invasion roads are improved by a return to the use of sugar in the diet.

Here we might point out the difference in the explanation of the sugar action in the old and the new caries concept. The acid concept taught us that the carbohydrates are transformed into acid, which decalcifies enamel—and that means caries. The new concept asserts that the sugar itself improves the living conditions of the micro-organisms on the invasion roads, at the same time reducing the suggested possibility of natural impregnation of keeping the roads occupied.

The therapeutic measures necessary in the various stages and different sequellae of the caries process can be determined only when a proper diagnosis has been made. The clinical appearance of frontal caries of enamel has already been discussed, and when the enamel surface is intact, radiographic examination must be used to determine whether the dentin has been reached. If no shrinkage or decalcification of the dentin is evident, the caries may have been arrested in the enamel and the area may be impregnated with a highly bactericidal silver nitrate compound, and kept under observation. Chalky enamel without pigmentation, a condition due to acid action and not caries, may be treated in the same way. Where an invaded lamella is present it is likely that caries has already reached the dentin.

When caries has invaded the dentin, either through frontal caries of enamel, through a lamella, through the cementum or initially as in exposed dentin, the therapy indicated is fundamentally the same whether or not cavitation has occurred. This consists of removal of all necrotic material, sterilization of the adjacent tooth structure, sealing the exposed dentinal surfaces, and restoration of the lost tooth tissue according to esthetic and functional demands.[15] Procedures may be varied according to the type of dentin caries found, and it is essential that we determine whether dentin caries is progressing or arrested.

The diagnosis of externally arrested dentin caries has been discussed, and in dealing with

this condition we need only to prepare the tooth suitably for restoration, impregnate for the sake of safety, and restore according to functional and esthetic principles.

In all other cavities it is necessary to proceed with caution. After removing the overlying or overhanging enamel, thus exposing the carious dentin, we remove the necrotic dentin with an excavator until we can determine the type of cavity we are dealing with. If we strike hard walls, and under good illumination find hard, yellowish dentin, we have dentin caries. In such a case we proceed with cavity preparation according to established principles, being careful not to remove the hypercalcified barrier, but utilizing it for the the walled off cavity of internally arrested floor and walls of the prepared cavity.

If, however, we remove the necrotic dentin, and a layer of soft decalcified but non-necrotic dentin, and find that no hypercalcified barrier has been formed toward the pulp, we have progressing dentin caries. It is essential that the bur should not be used until a diagnosis has been made, else a pulp exposure is possible. In progressing dentin caries, if no spontaneous pain has occurred, we should impregnate with a highly bactericidal silver nitrate compound, flow in a temporary filling of oxyphosphate of zinc cement, and proceed with cavity preparation and restoration. If spontaneous pain of short duration has occurred, we may wish to attempt to save the tooth. In such a case we may remove the necrotic dentin and, a layer of the softened but non-necrotic dentin, impregnate, and place a filling of cement with a zinc oxide-eugenol base. We should inform the patient that the outcome of our treatment cannot be determined for some time. If after three months the tooth remains comfortable, and responds satisfactorily to the pulp tester, the temporary filling should be removed. In many cases we will find that the dentin has hardened and may be used as the cavity floor. In other cases remaining soft dentin may be removed without exposing the pulp, secondary dentin having formed to protect the pulp.

Conclusion

Explanations of etiology and attempts at control became so complicated under the acid concept of caries that the whole problem seemed hopeless. The practicing dentist attempted to compensate for a lack of adequate control measures through the excellence of his operative procedures, only to meet with disappointment in many instances. Gottlieb's investigations have produced a concept of caries which is logical and embraces principles long recognized as fundamental in the other tissues of the body. The profession of dentistry can now consider that one of its greatest problems has at long last been explained in an acceptable biological manner. Mastery of the caries disease can be accomplished through continued efforts along these lines.

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SOUTHERN CALIFORNIA REPORTS — —

Dentistry for children in Southern California received, this year, two "shots in the arm," the inevitable snowballing results of which should prove of tremendous future significance in promoting the aims and objectives of the American Society of Dentistry for Children in this community.

No. 1. A plan conceived, organized and directed by zealous and able *Al Saunders,* A.S.D.C. member, and chairman of the Los Angeles County Dental Society's Council on Dental Health, to provide post-graduate training in dentistry for children, to large numbers of general practitioners.

Nine men and one woman were chosen and sent, at the expense of the Southern California State Dental Association Council on Dental Health, to San Francisco to take the excellent Post Graduate Refresher Course given at the College of Physicians and Surgeons by the incomparable *Dr. Charles A. Sweet* and his associates.

These ten then became instructors for another group of men who, after a stimulating send-off lecture by *Dr. Sweet* obtained practical experience on, and at the same time rendered badly needed dental service to, children of a small school in a suburb of Los Angeles.

This pattern will be repeated as long as dentists can be found willing to take the course.

No. 2. An idea, conceived by energetic *President Ted Gettinger,* to devote the monthly meetings of the Southern California Branch of the American Society of Dentistry for Children to improving the working knowledge of the members in dentistry for children procedures. The idea was to take a hypothetical child, needing practically everything in the book, through all the ropes from examination to dismissal with services completed, in the series of nine monthly programs.

As will be seen from the list below we are privileged to have on these occasions as imposing a group of clinicians, all local A.S.D.C. members, as could be found at any national or international meeting.

At the first meeting the "patient" had "Roentgenograms" taken by *Dr. Eugene Ziegler,* an outstanding expert in the field, and "Emergency Treatment" rendered by *Dr. Elsie Schildwachter,* who should know how. At the second meeting a "Diagnosis" was made by *John Brauer* which, needless to say, assured an accurate one. At the same meeting fees were quoted and collected by *Bruce Kurtz,* who doesn't believe in giving away his services to children.

The "child" became a little fractious at the third meeting so we learned "Patient Management" from *Don Schriber,* and *"Dutch" Everett,* a student of the subject, described the ideal "Office Equipment" for a children's practice.

At the next session "Local Anesthesia" for cavity preparation was given by *Neils Jorgensen* and *Mulford Smith*—both ardent crusaders for truly painless dentistry for children. *Dr. Jorgensen* presented an excellent film made by the College of Medical Evangelists under his direction, depicting how to accomplish nerve-block anesthesia for young children effectively and painlessly. *Dr. Smith's* clean and easily understandable description of his technic for intra-osseous and intra-septal anesthesia for children was extremely worth hearing.

Under the perfect (it lasted a month) anesthesia established above, *John Brauer* handled, with his usual capable and scientific thoroughness, "Pulp Involvement" and "Fractured Incisors."

At the last meeting an excellent and helpful information-packed, but concise, presentation on "Cavity Preparations and Restorations" was made by *Hugo Kulstad* who knows that subject as well as the many others he deals with in his Health Education and Council on Dental Health activities. *Dr. Kulstad* has agreed to make his paper available for possible publication in the A.S.D.C. Journal.

After a summer respite the program will continue in the fall with *Dr. Floyd Hogeboom,* Professor of Pedodontics at the University of Southern California College of Dentistry, carrying the ball.

This interesting and worthwhile series has considerably increased attendance at our meetings and has stimulated, we are confident, a much greater interest in dentistry for children in this already "children's dentistry conscious" community.

Donald S. Goudey, D.D.S.

Report from Massachusetts

The American Society of Dentistry for Children was invited to participate in a program on children's dentistry at the Second Dental District Society in Brooklyn, New York, on Monday, March 11th. Our program was as follows:

Afternoon Session:

A Symposium on operative procedures for deciduous teeth.

A. Materials—*Dr. Helmuth Zander*
B. Variations of cavity preparation—*Dr. Paul Losch*
C. Children Management—*Dr. Harold Berk*

Table Clinics on all phases of children's dentistry, presented by members of the Society.

Dr. Ronald Wyman—Operative Procedures for Children
Dr. Harold Berk—Use of Matrix in Pedodontia
Dr. Helmuth Zander—Space Maintainers
Dr. M. Michael Cohen—A Method of Correcting Individually Malposed Maxillary Incisors

Evening Session:

Essayist: *Dr. Joseph Volker*—Newer Concepts of Dental Caries

The American Society of Dentistry for Children (Massachusetts Unit) held its 3rd luncheon meeting at the Forsyth Dental Infirmary for Children on Wednesday, April 10th. *Dr. Charles Waldo,* Assistant Professor of Orthodontics at Harvard School of Dental-Medicine, spoke on "A Point of View Toward Orthodontic Treatment." He discussed his experiences and impressions as one of a group making a longitudinal health study on a group of children at the Child Health Research Council, University of Colorado Medical School, Denver, Colorado. The meeting had an attendance of 50 members and many guests.

The following members of this organization participated in the 82nd annual meeting of the Massachusetts Dental Society at the Hotel Statler, Boston Massachusetts.

Walter E. Briggs—Preventive Dentistry and Visual Education
Anderson S. Briggs—Hereditary Opalescent Dentine
Anna Mintz—Root Canal Therapy for the Deciduous Tooth
John R. Hanagan—Extraction of Deciduous Teeth
Raeburn R. Davenport—The Walpole Project
M. Michael Cohen—A Method for Correction of Malposed Maxillary Incisors
A. L. Corbman—What Massachusetts Dental Health Bureau Can Do for You
Harold Berk—Child Management
John R. Hanagan—Extraction of Deciduous Teth
Laura B. Dean—Procedures for Treatment of Deciduous Infected Pulp
Helmuth A. Zander—Treatment Planning for Best Results.
Joseph F. Volker—Recognition and Checking Caries Susceptibility
Paul K. Losch—Premedication and Anesthesia for Children
R. Ronald Wyman—Children's Dentistry
Helmuth Z. Zander—Pulp Effects from Filling Materials
M. Michael Cohen—Effect of Disease on Growth and Development of the Teeth and Jaws
Helmuth A. Zander—Pulp Reaction to Silicate Cement
Harry M. Sandler—Orthodontic Guidance
Fred Feingold—Space Maintainers

Harold Berk—Matrices for Compound Amalgam Restorations
Laura B. Deane—Procedures for Treatment of Deciduous Infected Pulps
Oscar I. Civen—Importance of Space Maintainers in Preventive Orthodontics
Maurice J. Savitz—Orthodontics for the General Practitioner
Herman S. Levine—Inlays for Deciduous Teeth
Anna Mintz—Cavity Preparations with Diamond Points

The Massachusetts Unit of the American Society of Dentistry for Children was invited to present a symposium in Children's Dentistry at Connecticut State University as part of a refresher course for returning veterans. The following program was provided by them:

Paul Losch—Influence of Operative Dentistry on the Transitional Dentition
Helmuth Zander—Materials used in Pedodontia and their Effects on the Dental Pulp
M. Michael Cohen—The Effect of Disease on the Teeth and Jaws

Table Clinics:

R. Ronald Wyman—Cavity Preparation
Harold Berk—The Use of Matrices in Children's Dentistry

At the annual convention of the Northeastern Dental Society at the New Ocean House, Swampscott, Massachusetts, the American Society of Dentistry for Children (Massachusetts Unit) provided the following program:

Clinicians:

Helmuth Zander—Materials used in Pediodontia and their Effects on the Dental Pulp
Paul Losch—Cavity Preparations for Deciduous Teeth
Harold Berk—Management of the Young Patient

Table Clinics:

Harold Berk—Matrices for Compound Amalgam Restorations
Harry Sandler—Simple Orthodontic Appliances for the Pedodontist
M. Michael Cohen—Simple Orthodontic Appliance for the Pedodontist
R. Ronald Wyman—Cavity Preparation and Fillings for Deciduous Teeth

The American Society of Dentistry for Children (Massachusetts Unit) held its last luncheon meeting of the year on Wednesday, June 5th, at the Forsyth Dental Infirmary for Children.

The following officers were re-elected: President, *Dr. Harold Berk,* Assistant Chief of Clinics at the Forsyth Infirmary for Children; Vice-President, *Dr. Ronald Wyman,* Instructor of Children's Dentistry at Tufts Dental School; and Secretary-Treasurer, *Dr. M. Michael Cohen,* Instructor of Orthodontics at Tufts Dental School.

Speakers were *Dr. Lendon Snedeker,* Executive Secretary of the Massachusetts Study of Child Health Service, who discussed the program of the American Academy of Pediatrics, which is planning a broad survey of the medical needs for children in the United States and the manpower necessary to carry on such a program. *Mr. Henry Patey,* Senior Psychologist of the Judge Baker Guidance Center for Children, spoke on the activities carried on at the Guidance Center at 38 Beacon Street.

M. Michael Cohen, Secretary.

Editorial

CHILDREN AND THE REBIRTH OF DENTISTRY*

By JOSEPH H. KAUFFMANN, D.D.S.

Everywhere, in every land, peaceful and justice-loving people, rich and poor alike, are on the march to make this world a better place in which to live. The common man is determined to obtain those things which will make life most worthwhile. Looking not merely at the present but thinking more seriously of the future, people are hoping that their children and their children's children may thrive amidst the fullest blessings of a saner world, free from the errors and iniquities of man's inhumanity to man. In truth, all good people are vastly more concerned about the comfort, happiness and good health of the younger generation than they are about their own. It must be the Almighty Himself who endows decent men and women universally with a tender sympathy for every child.

We all have work to do. Those privileged to be members of the American dental profession are especially responsible for the world leadership we hold in behalf of dentistry as a health service. As a corollary to this important obligation we must include and emphasize the orthodontic alleviation of widespread malocclusion. Nowhere can the maintenance of good mouth health and freedom from oral and related systemic disorders be more successfully achieved than in the field of dentistry for children. It is the beginning and the end; whatever goes beyond dental care of the child is relatively an aftermath of childhood neglect or misfortune, and in itself a partial compromise at best. This statement is not intended to serve as mere rhetorical ideation, for if we are honest with ourselves we will admit that it expresses a fact which stares us in the face. And it is not a revolutionary or sensational thought: rather is it a truism which for many reasons we either fail to recognize or, having recognized it, seek to elude. From the earliest moment of pre-natal life before the foundation teeth are laid down in the mother's womb, until all the requirements of the permanent dentition in childhood's formative years have been fulfilled, the paramount importance of dental care for every child is self-evident. Dentistry for children is socially advantageous, economically logical and professionally intelligent.

There is nothing too good for the mouth of a child. Our profession must put into practice, individually and collectively, a dynamic program of complete dental care for all children. It certainly can be done if only we have the will to do it. This is the age of prevention and control. The heavy flow of adult dental prosthesis and the ceaseless insertion of inert, lifeless replacements for natural, healthy mastication organs, many of which could be saved through childhood care and education, will not suffice. Either dentistry for children must be carried out by our profession as presently constituted, or else the public will simply look upon dentists as glorified mechanics. Failing in our obligation, the inescapable result will be the dismemberment of dentistry and its gradual elimination as an autonomous profession. Society gets what society wants and, if necessary, enlightened people will find another way

*From Jour. 2nd. D.D.S. N. Y.

Comment

whether we like it or not. Time is of the essence and the day is at hand for our profession to be reborn. Therefore, if dentistry is to be projected as a socially-conscious and health-minded calling, it is highly imperative that we make a forthright and spirited response to the dental needs of all children everywhere. Never was it more true than it is of us today, that "a little child shall lead them."

The Child Patient Today—The Dentist's Future Tomorrow

In the mad rush of today, the professional man or woman cannot adequately meet the demands upon his or her time, and at first glance, and without forethought, it seems as if this condition will go on indefinitely. Each day the dentist adds to his already overcrowded file of patients. The dental War Veteran is eager to return to his practice as soon as possible, yet with all this so-called "Professional Prosperity," few offices by comparison can boast of their practice of general Dentistry for Children, and none ever speak of this as a pleasure!

How long will the professional man be able to continue to operate solely upon the basis of doing no general dentistry for children? Is the importance of restorative dentistry for children to be overlooked by the majority of the dental profession?

The present boom of business will not live forever. Parents will once again, as statistics have proven, tend to neglect their own health because of the expenditure, so that their children may have the necessary dental and medical care they need.

The word "future" seems so remote that the average person today hardly gives it a thought, yet it is bound to arrive. Remember—the child patient of today is the adult patient of tomorrow.

Jean Hankey,
American Dental Assistant's Association.

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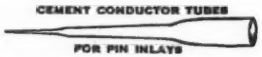

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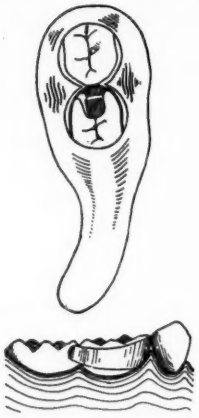

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Nutrition and the Child

RUTH H. ROWORTH
Philadelphia, Pennsylvania

Editor's Note:

Ruth Roworth is instructor in Nutrition and Dietetics in the School of Dentistry, University of Pennsylvania, at Philadelphia. Our usually well informed Gertrude Tank of the Pennsylvania Unit, left us out on a limb about our contributor, except to tell us she is author of the textbook "Nutrition and Dietetics for the Dental Hygienist," not only well informed but well liked and respected by her students and fellow teachers. There is much good advice in the accompanying article, and it will be well worth your while to read it to completion.

A.E.S.

Few people dispute the theory that the foundation of good health is laid in childhood. Recent research is indicating that the same may be true of dental health. Possibly the most important period in life for the health of the teeth is the childhood period up to 8 years of age when the enamel crowns of the permanent teeth are being formed. If these conclusions are valid, this is one more link in the chain of evidence affirming the fact that general health and dental health are closely related; that each is dependent on the other for its own integrity.

Actually, the health of the teeth has its roots in heredity as does general health. This is evidenced by the fact that certain developmental anomalies or dental defects occur as family traits. Missing or supernumerary teeth as well as abnormalities in formation may be hereditary.

More practically, we can say that the foundation of dental health begins prenatally.

It is interesting to note in this connection that many primitive tribes have marriage customs involving special premarital diets for the prospective bride and often the bridegroom as well. The eating of such specific foods may extend over a period of 6 months previous to marriage. A similar practice may have value in modern life. The weight of underweight women might be brought up to normal to help assure a better nutritive status at the time of entrance into pregnancy.

In modern nutrition, the latter half of pregnancy is thought to be more closely associated with the health of the teeth and bones because calcification begins about the 5th month. The last 10 weeks are particularly important because most calcification, quantitatively speaking, occurs at this time. However, the early period of pregnancy should not be underemphasized as the development of oral structures takes place during this time. It has previously been thought that the maternal body serves as a reserve supply of nutrients, protecting the unborn child from dietary deficiency. It is now known that, although there is justification for this theory, there are limitations to it; that if certain nutrients are low in the maternal stores the fetus also is likely to suffer.

This is borne out by recent studies correlating prenatal diets with birth ratings of newborn infants and health ratings for the first few months of life. Maternal health during pregnancy and in childbirth is also related to prenatal diets. Expectant mothers on good prenatal diets have fewer illnesses of pregnancy, including toxemias, than do other pregnant women on ordinary diets. Although a modern tendency of obstetrics has been to attempt to restrict the weight of the infant out of regard for the mother in childbirth, it was found that, even when the child was larger and heavier, delivery was less difficult for a mother on a good basic diet.

In regard to infant health, the birth ratings of infants whose mothers had good prenatal diets are higher than for babies of the control

group. Among other considerations, such infants are larger, which gives them a better start in life, and their birth lengths are longer, indicating that their growth has not been retarded. These findings are related to the liberal protein content of such prenatal diets. Infants have less illness in the first crucial months of life. The fact that a good prenatal diet also increases a mother's ability to nurse her child may be a factor here. In general, mother's milk protects the health and even the life of a young infant.

These implications for general health have been carried over into the field of dental health. Studies which have been made on the tooth structure of children, show that prenatal nutritional deficiencies affect enamel formation.

Besides arising from poor maternal diets, such defective tooth formation may be related to illnesses of pregnancy which prevent adequate nutrition. Illnesses from any cause usually prevent normal food intake. This lowers the maternal prenatal nutritive status with a possible unfavorable effect on the calcification of deciduous teeth in the latter half of pregnancy. Poor prenatal nutrition may also be one of the causes of congenital defects. Various developmental defects, including a cleft palate from riboflavin deficiency, have been produced in animals by faulty prenatal diets.

If tooth structure is likely to be unfavorably affected by prenatal nutritive status, it is valid to assume that any maternal condition that unfavorably affects the prenatal diet may prevent optimal tooth formation in the unborn child. Therefore, the prenatal recommendation that the mother's teeth and gums be kept in the best possible condition throughout pregnancy is well justified, not only from the standpoint of the general health of mother and child but also from the standpoint of the dental health of the unborn child.

Dental attention should be given to any ordinary factors in the mother's mouth that may hinder either the adequate intake of proper food or its utilization. If teeth are missing, broken or carious, they may prevent the ingestion of certain essential foods because of chewing difficulties. Undesirable gum conditions may also have the same effect for similar reasons. In addition, specific oral conditions associated with pregnancy should be alleviated. Pregnancy gingivitis, if not checked as early as possible, may cause increased discomfort in the latter part of pregnancy. This may diminish the proper intake of essential foods in this vital period.

Besides being a factor in promoting good general nutrition, the state of the gums exerts a definite influence on the foods eaten in respect to their texture. A frequent complication of pregnancy, particularly in the latter part, is a tendency toward constipation. A liberal intake of foods high in cellulose is necessary to combat this condition. Raw fruits and vegetables are particularly effective. However, these foods may be somewhat rough in texture and require additional chewing. If gum tissue is painful, there is a natural tendency to avoid hard textured or resistant foods which are high in residue and to substitute instead smooth, bland foods low in residue. In this way, the state of the gums may aggravate or even initiate constipation in pregnancy.

In pregnancy, increased amounts of all nutrients in the diet are essential. Those specifically related to the calcification of the teeth are calcium, phosphorus, and vitamins A. C. and D. Fluorine is also desirable but dietetically speaking its role has not yet been established prenatally.

It is easy and simple to provide the specific nutrients related to tooth building in pregnancy by foods commonly used in daily diets.

The popular recommendation of 1 quart of milk in prenatal diets assumes that some of the necessary calcium will come from other foods. To make sure that the total requirement for calcium recommended by the National Research Council be fulfilled, 1 1/4 quarts of milk daily or 1 quart plus 1 extra glass of milk may be used. Milk is easiest to take as a beverage. Because it is 87% water, it may take the place, if necessary, of some of the water in the diet. Some or all may be used in milk dishes instead, especially if milk is not liked. Cheddar cheese may be substituted, partially or wholly, for women who do not care for milk. For the phosphorus requirement, this amount of milk plus an egg, meat

and other basic foods in an average well-balanced diet will supply the recommended amounts of this mineral.

National Research Council recommendations for pregnancy are 6,000 I.U. of vitamin A. Whole milk, eggs and butter contribute valuable amounts of true vitamin A. However, one serving of a leafy green vegetable such as spinach, makes outstanding contributions of carotene, the precursor of vitamin A. Most "greens" contain over 10,000 I.U. of potential vitamin A. Spinach contains 20,000 such units. Hence, one daily serving of such foods amply allows for the partial inefficiency of the liver in converting carotene into vitamin A. Any fish liver oil furnishes vitamin D. An 8 oz. glass of orange juice, or even better 2 medium sized whole oranges because of cellulose, will supply sufficient vitamin C.

The amount of orange juice, besides its use in fetal tooth calcification, also protects maternal gum health. Certain members of the B complex group of vitamins are also associated with the health of the gums and other oral tissues. These may be provided by a good basic diet of a variety of foods or their liberal inclusion may be assured by the use of a couple of tablespoons of wheat germ or of rice polishings which are particularly high in niacin.

Every effort should be made to have as optimum a diet as possible in pregnancy. The structural development of deciduous teeth should be as perfect as possible to aid in their preservation until the permanent teeth are ready to take their places.

In infancy, nutrition may be specifically associated with mouth habits. Thumb sucking with its possible effect on the arrangement of teeth and facial appearance may arise from hunger due to insufficient food in infant diets.

Sometimes, an attempt by the physician to establish a 4 hour schedule for the infant, instead of allowing it to develop its own individual rhythm in feeding, is responsible for this habit. Some infants do not have the stomach capacity to ingest at one feeding enough milk to last for a full 4 hour interval. Three hours or between 3 and 4 hours may be more suitable for some infants. Again, undue haste on the part of the mother, to dispense with the 2 A.M. or night feeding as early as possible, causes hunger and tension which is abated by resorting to thumb sucking. Too short a time given to the infant for nursing may also bring about this habit, because insufficient sucking exercise causes mouth tension. In artificial feeding, unusually large openings in rubber nipples may decrease the opportunity for normal sucking action. Sudden changes in feeding schedules or length of feeding time are also more likely to cause the onset of this habit than more gradual adjustments.

Dentists can point out to young mothers the danger of such dietary practices from the dental standpoint. This habit, once formed, is hard to break. If it persists beyond the normal limit of 5 years, it may affect the permanent dentition and cause malformation of the jaws. Naturally there are other factors involved. Psychologic factors associated with unfavorable environment conditions enter into this habit as well as physiologic factors associated with body tension. This latter tension is associated with the normal physical underdevelopment of internal organs in infancy.

Strong enamel is the first line of defense against dental caries and the enamel of permanent teeth (with the exception of the 3rd molars) is fully formed by 8 years of age. Therefore, the diet of childhood up to at least 8 years of age is of paramount importance in perfect enamel formation of these teeth. There is no factor of safety for the child in the calcification of permanent teeth as there was for the deciduous teeth of the unborn child with reserve supplies in maternal tissues to help compensate for dietary deficiencies. Furthermore, fully calcified enamel cannot thereafter be rebuilt or repaired by any known dietary constituents. Therefore, essential nutrients in sufficient amounts should be provided in childhood to form the strongest enamel possible—once and for all time.

That diet in childhood affects the structure of teeth in formation is shown by recent studies revealing microscopic enamel defects due to nutritional deficiencies, similar to the neonatal line resulting from metabolic disturbances during birth adjustments. Just as the neonatal line occurs at a definite time in

calcification so these other enamel defects corresponded to specific periods in a child's life when there were systemic disturbances. Such enamel defects were related predominantly to nutritional deficiencies. There were single or multiple deficiencies of the same nutrients that are associated with the building of the teeth, i.e. calcium, phosphorus, vitamins A, C, and D. More defects seemed to be associated with vitamin D deficiencies. This shows that the enamel-forming process is so sensitive it can be disturbed by a deficiency of the materials needed by ameloblasts for calcification. It indicates the importance of obtaining proper dietary nutrients in sufficient amounts during periods of enamel calcification.

This may also show a relation between good general health in childhood and possibly good dental health throughout life because of decreased systemic disturbances. Many illnesses produce temporary nutritional deficiencies because food intake is lowered or food is not utilized. Lack of appetite accompanying many illnesses decreases food consumption, whereas vomiting or diarrhea in gastric or intestinal disturbances prevents the use of food by the body. Sometimes food requirements are increased in illness, aggravating the results of lowered intake.

Fluorine is associated with dental problems in childhood in that it affects the teeth only during formation or for a short time after eruption when the teeth are most sensitive to their new oral environment. In a 10-year experimental project in mass preventive dentistry in 3 communities in N. Y., Michigan and Ontario, Canada, the public drinking water is being fluorinated with 1 ppm F. to give children living in these communities protection against dental decay without mottling the enamel.

Information is also being sought to determine with scientific exactitude whether such moderate amounts of fluorine in drinking water may have any systemic effects. Studies will include physical and medical examinations with analyses of blood and urine as well as x-rays of arms, forearms and tibias. No unfavorable systemic effects are expected to be revealed as many Western communities have used fluoride-containing waters of much higher concentration for many years without apparent systemic harm. Also recent data collected from groups of young men born and bred in communities where the concentration of fluorine is 5 times that of the experimental community projects showed no systemic effects in respect to growth, as shown by height and weight, or in bone strength as indicated by histories of accidental bone fractures. A metabolic equilibrium seemed to be maintained by efficient urinary excretion of fluorine; the amount of fluorine excreted corresponding to the amount of fluorine ingested in drinking water.

In individual preventive dentistry, in addition to topical applications of fluoride on children's teeth, fluorine in the diet is under investigation. Information is being sought on the fluoride contents of foods. Apparently fluorine is present in foods only in small amounts. Food grown in fluoride regions do not seem to contain more of this element than foods produced elsewhere. Therefore it has been estimated that the average diet uniformly contains only about 0.3—0.5 mg. daily. This amount is exclusive of fluorine ingested in drinking water. Because of this fact, it has been suggested that children up to 8 years of age in low-fluoride regions obtain a total daily dietary intake of from 0.3—0.5 mg. F. This total figure would, of course, take into consideration any natural fluoride content of local drinking water.

Bone meal has been used for adding fluorine to the diet but, although this is a natural product, this supplementation is still in the experimental stage. Its indiscriminate use is particularly deplored. Fish paste has been mentioned as a dietary supplement for fluorine. In this product, the fish bones which contain fluorine are macerated with the fish flesh. The amount of fluorine varies with the brand. In high content brands about ¼ lb. would be necessary for minimum daily requirements. Therefore, this is not practical to use as the sole supply of dietary fluorine.

Preservation of the teeth is an important factor in preventive dentistry for children because of malocclusion. Loss of any teeth, but especially of the first molar, may start a chain

of dental events preventing normal development of the teeth, jaws and face at a time when rapid growth is taking place. A resulting facial disfigurement, leading to mental unhappiness, and decreased chewing power, impairing physical health, may be equally unfortunate in the life of an individual.

To prevent premature loss of teeth, a good diet containing all the protective elements is essential. In addition, resistant and fibrous foods to cleanse the teeth and develop good chewing habits should be supplied to children throughout childhood beginning with easily digested zweiback or hard bread at 6 months of age.

A vicious circle may be established in childhood between dental and general health if the proper type of diet is not provided. Lack of proper exercise of facial muscles and bones may result in malalignment of the teeth and underdevelopment of jaws which prevent normal chewing action. If food cannot be properly chewed, the intake and utilization of food is decreased. The resulting lowered nutritive status affects the condition of the teeth and periodontal tissues as well as general systemic health.

The introduction of foods in a young child's diet to supply chewing action must be attended with caution. Digestive factors must be given consideration because the preschool child does not tolerate certain forms of cellulose well. Softer types of cellulose as in vegetables, especially if cooked, and cereals are well tolerated and necessary for peristalsis. The tendency of the infant toward diarrhea is replaced as the child grows older, by a tendency toward constipation.

Cellulose should not be too coarse, as in whole-grain breads, bran cereals or corn. Bran may cause irritation of the delicate intestinal mucosa of children. Other foods may cause indigestion, as for example corn and such fruits as watermelon or cantaloupe. Fried foods, although crisp, are difficult for children to digest if their fat content is high. Peanuts and other nuts are not well masticated at this age. Shredded carrot may be introduced but carrot or turnip sticks should be restricted until chewing habits are better developed.

In the preschool period, besides hard breadstuffs, stringless celery may be used and also most fruits. Orange segments should be substituted for orange juice. Apples and pears should be pared. The cellulose in skins is too rough and irritating to intestinal membranes and may not be well chewed.

In the school child, missing deciduous teeth present problems in chewing. Food may need to be cut in small sizes and texture may have to be considered.

In the formation of the teeth, calcium is quantitatively the most important mineral. In American diets, milk is pre-eminent as the most easily available, cheapest and best source of calcium. It contains the largest amount of calcium of any food, in company with an abundance of phosphorus in good proportions. It is easily digested by children and the calcium in milk is better utilized than plant sources of this mineral. As a beverage, milk is easy to ingest and may replace some of the necessary water. Dietetically, it is the easiest way of getting sufficient calcium in a child's diet. As a beverage, it is not a bulky food and is not so likely to displace other essential foods because of space-taking characteristics. It is also the most outstanding protective food because it contains all other known nutrients even though the iron and several others may be present in suboptimal amounts. Furthermore, the popular recommendation of 1 qt. daily per child corresponds with the scientific recommendations of the National Research Council of 1 gram calcium daily in childhood up to 9 years. This is because 1 qt. milk contains a fraction over 1 gm. of calcium (1.16 grams).

Because of digestive problems, children cannot use cheddar cheese as a substitute for milk as adults can. Nor can cottage cheese, which is easily digested, be substituted because it is low in calcium. Most of the calcium is lost in the discarded whey. Cottage cheese contains only about 1/10th as much calcium as cheddar cheese. Some milk in made-dishes is desirable but too much in this form may be too bulky and may crowd out other essential foods in younger children. After milk (and cheddar cheese for older children), the next best sources of calcium in foods are leafy green vegetables and certain other vegetables.

But they are much lower in the quantity and quality of calcium. The softened bones of canned fish, salmon, sardines, herring, etc., should not be discarded as they are excellent sources of calcium. However, most other sources of calcium are only appreciable.

In general, to be sure of sufficient calcium in periods of childhood when the mineralization of the teeth is taking place, the daily quart of milk for each child should be stressed for optimum dental health. For economical, low-cost diets, it should be noted that skim milk contains more calcium than whole milk and buttermilk almost as much as whole milk because calcium is concentrated in the skim part of milk. Dried milk, whole or skim, is just as rich in calcium as the fluid varieties and is cheaper. Evaporated milk is cheaper than fresh milk and contains more calcium. In addition, most evaporated milk is enriched with vitamin D. Therefore, it is especially suitable for infant and childhood feeding, particularly when safe fresh milk is unavailable.

Condensed milk should never be recommended because of its added sugar. Chocolate milk should not be advocated. Besides the added sugar, the chocolate flavoring may be undesirable. Either chocolate or cocoa may interfere with the proper utilization of calcium. Research is not complete on this topic as yet. Another objection to chocolate milk is that children, like adults, tire of the daily use of any highly flavored food. They may later refuse to take any milk as a beverage. In nature, bland foods like bread, cereals, milk and potatoes, unlike foods with distinctive flavoring, are staple products people can use day after day without tiring of them.

Phosphorus ranks second to calcium as a quantitatively important mineral in tooth structure. Since it is associated with calcium in good proportions in milk, the popular recommendation of 1 qt. of milk in childhood furnishes most of the daily supply of phosphorus —about 88%. National Research Council recommendations suggest that phosphorus allowances for children at least equal those for calcium, i.e., 1 gram. Therefore, one egg daily, furnishing slightly more than 1/10th gram of phosphorus, and 1 qt. of milk, furnishing almost 9/10th of a gram, together will almost fulfill the minimum daily requirement for this mineral. Phosphorus is not considered a problem in American diets because other ordinary foods in the average diet like meat and grain products are rich in phosphorus.

The so-called anticalcifying effect of cereals, because of their content of phosphorus (phytin-phosphorus) in the form of phytic acid, is not thought to be significant in tooth calcification of most American children. It may be a factor only if diets are very high in cereals and borderline in calcium and vitamin D, which is not likely to be the case in this country, even though calcium is the nutrient most likely to be low in American diets and vitamin D is also low in certain Northern sections, especially in cities.

It is well known that vitamin D is essential for the utilization of both calcium and phosphorus during periods of tooth formation but there is no evidence that it is useful thereafter in aiding to prevent dental caries. However, studies with children in respect to vitamin D have shown that, in childhood, a lower caries rate is associated with increased amounts of vitamin D whether in the diet or from sunshine.

Dietary supplementations usually consisted of some type of fish liver oil or vitamin D enriched milk, including exaporated milk. The incidence of dental caries was lower in such groups of children in comparison with other children not receiving such supplementation. Vitamin D from sunshine has been used in some studies to show decreased caries rates. Identical diets were used with children in sunny Los Angeles, California and foggy, cloudy Portland in Oregon. (Mott Erwin please note—Ed.) In another study, school children in Tennessee and New Jersey were compared. Seasonal variations in the rate of decay have also been shown to correspond with the available sunshine. Comparisons between service-men from Southern States and New England revealed less rejections for dental reasons among Southerners than among Northerners.

The low incidence of dental caries among famine victims in India, including children with severe rickets, has been the subject of

much discussion. Among other factors this condition has been associated with the superabundance of vitamin D received from sunshine in childhood while the permanent teeth were being calcified. Geographic, economic and social conditions in a hot and also so-called poor country like India differ from other countries in certain respects. Children run naked or practically naked up to 10 years of age, often later. This custom is significant in that vitamin D is essential for the efficient calcification of the teeth. In abundance, this vitamin mobilizes even small amounts of calcium and phosphorus, making the most efficient use of any such minerals available. However, the effect of vitamin D on the enamel of permanent teeth is effective only up to about 8 years of age—at which time the enamel crowns are fully formed. Hence, Indian children have a maximum opportunity for efficient calcification of enamel as far as vitamin D is concerned, at the most impressionable time of life. When enamel is once calcified, calcium or other minerals cannot be withdrawn from it, even under famine conditions.

Other dietary factors associated with the low caries rate were the coarse, resistant types of food consumed in such districts in India and the lack of refined and sugar-containing foods.

That sunshine or vitamin D in formative tooth periods may be vitally important is shown by the fact that natives of nearby Tibet have been found to have a higher incidence of dental caries, and particularly high for an isolated and somewhat primitive group subsisting on its own native, unrefined foods. The geographic situation of Tibet on a mountain plateau is different from the plains and hills of nearby sunny India. The climate is cool throughout the year and cold in winter. Obviously, there is not the exposure of the body to sunshine in childhood, or at any time in life, with a resulting production of vitamin D such as is possible in India.

In temperate zones, fish liver oil is the surest of vitamin D and necessary in view of the uncertain availability of sunshine. Once a child has been trained to take fish liver oil in infancy, the habit can be continued and should be continued for dental protection up to at least 8 years. When a child has been accustomed to taking fish liver oil in infancy, it is not an emotional problem to take it in later childhood. Nor is any re-educational problem involved if its use is continued in both summer and winter without interruption for the sunny summer months.

It has also been noted that large doses of vitamin D to prevent rickets in childhood are more effective in some cases than smaller daily doses. Such large occasional dosages of vitamin D may be feasible in normal nutrition and would assure a sufficient amount of this vitamin more efficiently than is at present often the case.

Vitamin C is needed for tooth structure, especially for dentin because it is indirectly concerned with calcification through matrix formation.

Sufficient vitamin C is assured if citrus fruit or tomatoes are used daily. One whole orange, half a grapefruit or 2 fresh tomatoes fulfill the daily vitamin C requirements of the young school child. When the period of infancy has passed, orange juice should not be strained because some of the minerals and vitamins are lost in addition to the cellulose. The whole orange is better than the juice because it gives chewing action and is therefore more stimulating to the gums. It is also more helpful in peristalsis. The difference between constipation and normal intestinal action in children, as in some adults, may merely be whether citrus juice or the whole fruit is taken.

From the dental standpoint, natural unsweetened, citrus fruit juices are preferable to the sweetened product and contain the same amount of vitamin C. Tree-ripened citrus fruits or vine-ripened strawberries and tomatoes contain more vitamin C than those that are green picked. Because of efficient modern methods of canning in vacuum, the vitamin C content of canned citrus fruits and juices of tomatoes is only silghtly lower than that of the fresh foods.

The potency of common fruits and their juices vary. Grapefruit is approximately 7/8 as potent in vitamin C as the same amount of orange. Tomato juice is ½ as effective as orange juice, which means that twice as much

tomato juice as orange juice is necessary to obtain the same vitamin value. Pineapple juice is still lower, being only about ½ as potent as tomato juice. Prune juice should not be used as a substitute for citrus or tomato juices in respect to vitamin C as it contains practically none of this vitamin. Canned guava juice has potentialities as an excellent source of vitamin C as it is 2½ times as potent as canned orange juice.

Vitamin A is particularly important for the teeth in childhood up to 8 years of age because it is essential in enamel formation. The quota for the school child is amply fulfilled if the daily diet contains a quart of milk, an egg, a couple of pats of butter or fortified margarine, and a serving of any green or yellow vegetable.

Fish liver oil, in addition to vitamin D, also contains true vitamin A unmixed wth carotene. One teaspoon of cod liver oil usually contains over 3,000 I.U. which almost equals the daily requirement of 3,500 I.U. for the 8 year old child.

No specific diet for dental health has yet been agreed upon but it has been noted repeatedly in many studies that good basic diets with a minimum of sweets will lower the caries rate. Even small amounts of sugar in the diet affect the caries rate. Besides its local effect orally through fermentation, there are thought to be as yet unknown systemic effects of sugar. Many races all over the world living on natural, unrefined foods with little or no sweets have low caries rates. This is in spite of the fact that most of these people have a diet high in so-called anticalcifying cereals. Sometimes in American dental practice, adult patients are found without dental decay. Invariably these individuals are unique in never having cared for sweets in their childhood and usually continue this proclivity in adult life. If a dental diet is ever proposed, it seems to be commonly agreed that sugar will be the first article of food to be restricted.

The acid-base balance of the diet is another factor of diet that is being related to dental health. Decreased caries rates are shown with this type of diet. Improved gum health is also noted in acid-base regulated diets. Sweets such as candy, ice cream and cake are excluded and fish liver oil is included for all children and sometimes for adults. The diet consists of a preponderance of base-forming foods over acid-forming foods. In some instances, 1½ portions of fruits and vegetables are used in the diet for each non-fruit and non-vegetable food, except milk.

The type of meals eaten by children in both early and late childhood may seriously affect not only their general health but their dental health. Due to the routine of modern life, breakfast and lunch in particular are likely to be inadequate.

It has been pointed out that the typical modern American breakfast produces mid-morning hyperglycemia followed by hypoglycemia. This is caused by an unbalanced breakfast, high in carbohydrate and low in protein and fat. Proteins and fats are digested more slowly and therefore are absorbed into the blood more slowly than carbohydrates. They retard the onset of hunger until the normal time for the next meal. Breadstuffs with jelly, doughnuts and other sweet dough products, coffee with sugar, and even such a desirable food as fruit are carbohydrate foods, which are quickly digested. Glucose, the end product of their digestion, is rapidly absorbed into the bloodstream causing temporarily a high sugar level in the blood or hyperglycemia. This high sugar level drops to a low sugar level, hypoglycemia, if foods relatively high in protein or fat like eggs, milk, cereal, etc., have not been included in the morning meal.

In the rush to get to school on time, children, especially girls, tend to neglect their breakfast. This brings on mid-morning fatigue and hunger before the noon meal. To relieve this condition, children will resort, whenever possible, to before-lunch snacks, usually of cookies or sweets, which are undesirable for the teeth and diminish their appetite for lunch. In addition to breakfast, many school lunches are inadequate, whether they are made up of sandwiches, cake, etc., brought from home or are due to unwise selections in the school lunchroom.

That lunches, and probably both lunch and breakfast, are inadequate is shown by the mid-afternoon habit of consuming sweets. If fruit or milk were the customary after school snacks, this might be good dietary practice. But

usually this extra food is composed of candy, soft drinks or cookies. If it is taken too late in the afternoon, it often interferes with the proper intake of more nutritious food offered at the evening meal. This meal is often the only meal to which many Americans take time to do full justice or to enjoy with normal leisure.

The remedy for the excessive consumption of sugar-containing foods between meals by American children is an adequate breakfast containing at least ¼ or between ¼ and ⅓ of the daily dietary requirements. More attention should also be paid to the selection of proper foods at the noon meal.

The unfortunate existing dietary situation may also aggravate the incidence of "teen age caries." Naturally many other factors are involved in this dental problem. However, adolescence is the time of the greatest total growth in life and is complicated by adolescent growth spurts. All dietary nutrients must be increased. Extra calories, preferably from protective foods, are essential for the superabundance of activity often exhibited at this time. Boys need extra calories because of the highly stimulating and exhausting nature of competitive athletic sports. Because these cause excessive fatigue, boys turn to the sugar in soft drinks and other sweets for quick energy. Girls are involved in reducing fads. They spurn breakfast as well as nourishing foods such as potatoes in regular meals. To compensate for the resulting lack of eneregy, they have to resort to between-meal snacks which are usually sweets of some sort and therefore harmful to the teeth. Sweets may be particularly harmful in the accompanying absence of sufficient protective foods. The excessive use of sweet flavored gum between meals bathes the teeth constantly in an acid medium with an unfavorable effect on the teeth.

Another dietary problem, common in American life, is directly related to dental health. Many American children have one characteristic that distinguishes them from children in the world at large. They are often forced to eat. In other countries, children not only show eagerness in eating any food set before them but they consume their meals with relish and enjoyment. The abnormal situation in this country has been brought about by a number of factors, which are mostly psychologic. In the background is an emphasis on the nutritive values of certain foods and popular information on the loss of minerals and vitamins from other foods due mostly to modern changes in our habits of living. Urbanization or the concentration of large populations in cities has removed people far from their sources of a natural food supply. No longer are such people able to obtain fruits and vegetables fresh from their own gardens or nearby farms with a maximum content of nutrients. Before such foods or other foods reach the consumer they are subjected to various changes which lower their values of vitamins, minerals and sometimes other nutrients. On the other hand, sugar or other substances may have been added to flavor or to preserve them. Many factors enter into this problem. The soil and growing conditions, the harvesting of unripened or green fruits such as tomatoes and strawberries, the time interval elapsing during transportation, storage and distribution of these and other foods, refining, processing, as well as preparation and cooking methods in the home are all involved. The value of foods in building good health has also been popularly stressed in modern life.

A combination of these factors has given mothers concern that their children will not has communicated itself to children disturbeat *enough* of the *proper* foods for their optimal well-being. The worry of mothers ing their emotional attitudes towards food. Thus, in addition to its primary function, food has come to be used by many mothers as an instrument of punishment, reward or bribery. The child reciprocates by using food as a means of domination over his family.

The most unfortunate aspect of this situation from the dental angle as well as for general health is the classification of foods into desirable and not so desirable groups. Candy and sweets are held up as the ultimate in eating enjoyment. If a child eats his vegetables he may have a certain sweet dessert, cake, ice cream or even candy. This bribery stimulates and encourages at an early age an abnormal

interest in sweet foods, the taste for which is more easily acquired than for other flavors. It also decreases the intake of more nutritious foods. The situation is aggravated by the examples set by parents in regard to their own food. Desserts are looked upon with keen anticipation while protective foods are usually disregarded. It is even worse if one parent or another member of the mealtime group openly comments unfavorably on certain foods or refuses to eat them entirely.

Sweets are not essential to a child's personal happiness, especially if no issue is made of them by parents or family members. In the normal upbringing of children, the variety and form in which food is presented to them differs from that of other members of the family. Pickles, fried foods, coffee, etc., may be on the table without exciting any interest in a child who has never tasted them. Many children have survived long periods in childhood without candy to the lasting benefit of their teeth.

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Members of the dental profession whose private practice or clinical services include the care of children will have a major interest in the Study of Child Health Services which has recently been undertaken by the American Academy of Pediatrics with the cooperation of the U. S. Children's Bureau and the U. S. Public Health Service.

Collection of the necessary data will be carried out on a State basis, with individual State programs administered by State Chairmen of the Academy of Pediatrics with the assistance of one or more Executive Secretaries. The American Dental Association and the American Society of Dentistry for Children have officially approved the Study and in several States endorsement of the program has been evidenced by unanimous votes of approval by members of State Dental Societies. The genuine interest shown thus far by all members of the dental profession approached in connection with the Study bids fair to produce the cooperation essential to the successful completion of the Study.

Dentists who care for children have at their disposal information which is important to the Study. Within the next few months each dentist will receive a brief, one-page questionnaire requesting information concerning the proportion of his practice devoted to children, the type of cases carried and other data which cannot be obtained from any other source. Each dentist is asked, for example, to record the number of child patients seen on a particular day of the week. It is fully realized that the day specified may not be a typical one for many dentists, but in order to obtain statistically sound information it is essential that each dentist furnish the information requested *for that day only.*

The evident need for a thorough fact-finding Study such as the present one would seem to more than warrant the relatively small amount of time and effort required of each individual asked to supply information.

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AROUND THE COUNTRY

Missouri

The Missouri unit held a most interesting and profitable meeting, March 25th, at Washington University School of Dentistry. An unusually large attendance, with a great deal of renewed interest. *Dr. William D. Parren* presented a paper, augmented with slides, entitled "The effect of sodium flouride upon tooth enamel."

Michigan

At the annual meeting in April, our old friend *Walter McBride* was elected President for the coming year. Due to the war emergency the Michigan unit has been inactive. Now that we are "fighting the peace" *Walter* will gather around him the old faithfuls and together they will instill new life in the "old bird."

And did you read Time—May 27 issue!?? "Advice to Mothers:

U.S. dentists gave three silent cheers last month for Doctor *Walter C. McBride*, of the University of Detroit, spoke a heartfelt mouthful about Mothers who insist on following their young into the operating room. Particularly objectionable: the Mothers knows it hurts type; the one who says "Johnny, spit like the dentist told you to." Mama, *Doctor McBride* forcibly implied, should stay to hell in the waiting room."
(Please take note *John Brauer*—you may crash Hollywood but *Walter* said "hell" and made "Time.")

Walter currently appeared on the Continuing Education Programs for District Societies, sponsored by the Michigan State Society and State Health Department. Synopsis of subject: "A discussion of the organization of the procedures incident to children's work, both the management and operative problems, with an eye to the basic factor—time."

Our hard working Editor, *Al Seyler*, was also a clinician on the tour of State Societies. Your column editor enjoyed both presentations and picked up some valuable pointers. (Stan still maintains that the use of the rubber dam in children's dentistry is practical, and aids in the child management problem.)

From Cleveland came *Carl Miller* and his practical clinic on the management of amalgams (including the use of the rubber dam). The Upper Peninsula Societies were privileged to have *Carl* this time. Last year we fellows in the Lower Peninsula were likewise privileged. *Carl* has done a lot for our A.S.D.C., in way of securing new members and convincing some of us that the use of the dam is practical.

Ralph Campbell is out doing his "stuff" again. *Ralph* was one of the instructors for the assistant's course sponsored by the Assistant's Society of Detroit. *Ralph* also appeared before both dentists and assistants in separate presentations at the three day Cleveland Spring Meeting.

Pat Kinder has his "sailing" job all ready for you sailing fans. *Pat* will take a day off any time one of you Californians choose to take a sail with him! And it won't be California mist—but real Lake Michigan water.

Earl and *Mrs. Keim* entertained the Council at their lovely home.

Floyd Arnold has solved the "office lease" problem. He has purchased the building which houses his office. *Floyd* is also news correspondent for his district.

Jim and Dorothy Veryser are the proud parents of a BOY! April 17th—wee early hours of the morning. Nice going folks.

Pennsylvania

This "gal" *Gertrude Tank* certainly keeps things going in the Pennsylvania unit. A new set of officers, fifty four members, five honorary members! Not bad Gertrude—not bad!

Officers — President, *Dr. Edward Ray Strayer;* V. President and Program Chairman, *Dr. Ralph Orner,* Sec'y.-Treas., *Dr. Gertrude Tank.*

Here and There

Both *Charlie Sweet* (Oakland, California) and *Carl Miller* (Cleveland, Ohio) appeared on the Georgia State program, May 12-13-14-15. *Charlie* told the boys why they should do operative dentistry for children and then demonstrated the technics most commonly used.

The laboratory situation (in Michigan, at least) is becoming a live issue. Unless some constructive action by the dental profession is not forthcoming soon, Petrillo may think the noise is music and we poor dentists will take orders from "Mr. Music." Just another good reason, Charlie, why every dentist should do dentistry for children.

A "must" article to read appeared in the May issue—Dental Health—by *Dr. P. E. Blackerby*. *Dr. Blackerby* is Director of the Division of Dentistry of the W. K. Kellogg Foundation. This young chap is going places—watch him!

Jack Wisan also has a "must" read article in the same issue. As you know, *Jack* is Consultant, Dental Health Program, New Jersey State Department of Health and representative of the A.D.A. on the National Committee on School Health.

One of our outstanding child health workers, *Dr. C. Ray Taylor*, is now in private practice, located at 319 W. Lenawee, Lansing, Michigan. Ray is very happy practicing what he preached for years, and the Lansing youngsters have found a new friend.

Editor Al reminds me that I should not forget the deadline date, and here I am trying to "rest up" for a vacation in Canada. It really will not take too long to assemble the material all you members sent!

Walter McFall spoke on the program of the 76th Annual Convention of the California State Dental Association, April 29-30-May 1.

Ralph Ireland was on the Missouri State Program, April 14th. Said Ralph, "Adequate dental service for children imposes on the dentist a greater responsibility to his young patients than he has, in the past, been willing to assume. Unless dentists begin to practice more and better dentistry for children, some other health agency will assume the responsibility for them." This is a warning of true trends and let not the indifferent dentist say he was not "told."

New Jersey

In conjunction with the State Dental Society meeting, the New Jersey unit S.D.C., enjoyed a noonday luncheon with *Doctor Lester W. Burkett* as speaker. He spoke on "Focal infection in Children," a subject which is a live one and most profitably enjoyed by the fine attendance.

Men in the News

Dr. Roy G. Ellis, Toronto, appeared on the Milwaukee County Dental Society Program, May 15th.

By popular request, *Dr. George Morgan* will conduct a course on the technique for Johnson Twin Wire appliances. This will be a limited attendance course for the Milwaukee boys.

Jack Wisan calls our attention to an A.D.A. reprint, "Dental Health Education in a School Health Program," by *Harold Berk*, D.D.S., and *Rarburn R. Davenport*, D.M.D., Boston, Mass. (Reprint from J.A.D.A. Vol. 32, Pages 1269-127, Oct. '45.)

Walpole, a town of 8,000 inhabitants, was one of the first towns in Mass., to establish a school dental health clinic. All children through the sixth grade were cared for by the clinic. A survey showed that an increase in caries and its sequela occured from the sixth grade through the last year in high school. An educational program for these grades was instituted, working through the departments of economics, botany, chemistry, art and biology. The biology department performed a nutritional experiment with two white rats, showing the effects of (1) balanced diet, (2) a diet composed of poorly chosen foods. As one child wrote: "Okie (balanced diet) and Cokie (poorly chosen diet) were two mice. Cokie eats sweet things. Okie does not eat sweet things. He eats good things. Cokie is a skinny rat. Okie is a fat rat."

Dental Societies can aid in promoting such a program by offering the necessary material and advisory services. If interested, ask *Jack* or *Harold* to send you pamphlet entitled,

"Teaching Your Town About Teeth."

Harvey Janke, Al Sadd, Ralph Creig, and *Leon Newman,* of our Cleveland, Ohio Unit, deserve the publicity they received for their efforts in behalf of the Cleveland Children's Dental Health Day. Saw their pictures in several periodicals!

Charles Conally of the Michigan Unit is *really* a dog fancier! He had seven dogs entered in a recent show near Detroit and walked away with several blue ribbons won by his beautiful Borzois hounds. *Charlie* has an air-conditioned up-to-the minute building adjacent to his home to house his pets.

Bill Davis has turned over the directorship of the Bureau of Public Health Dentistry of the Michigan State Department of Health to genial *Freddie Wertheimer.* Congratulations to you *Bill,* for a job well done and good luck to you, *Freddie* for your continued success.

Sandy McGregor on Pedodontics and *Vern Fisk* on Orthodontics, appeared on the program of the National Convention of Canadian Dentists held in Toronto late in May.

Sam Stulberg, back again in civilian practice, has stepped right into the activities of the Michigan Unit. Sam is in charge of the afternoon of clinics on Pedodontics which are to precede the scheduled Detroit District Dental Society meeting which will be devoted to Pedodontics.

Sam Lewis of our Michigan Unit is conducting a special graduate course in orthodontics during the month of July, and from what Bob Coleman tells us, it is really a stiff, highly informative course. Sam has resigned his Professorship in Orthodontics at the University of Detroit School of Dentistry, handing over the reins to genial *Herschel Reynolds,* who has been his able assistant for the past twelve years.

Two more members of our Michigan unit are active in the affairs of the Detroit District Dental Society, *Louis Braun* being President and *Ralph Campbell* program chairman for the coming year. It is largely Ralph's doing that Pedodontics will be the subject of the first general meeting of the year.

Frank Lamons and *William Garrett* participated in the teaching of the refresher courses offered by the School of Dentistry, Atlanta-Southern Dental College, Emory University from May 27 to July 6th.

Massachusetts

Dr. Paul K. Losch, Assistant Professor of Clinical Dentistry at the Harvard School of Dental-Medicine and one of the pioneers in the American Society of Dentistry for Children, is doing a fine job educating the public in the importance of children's dentistry. He has participated in the following programs: On March 25th, he addressed the Brockton Women's Club on "The Importance of Children's Dentristry. On May 28th, he spoke to the Nashobi County Public Health Association on Children's dentistry. The Connecticut State University sponsored a refresher course for veterans at which *Dr. Losch* spoke on "The Influence of Operative Dentistry on the Transitional Dentition."

A public drive for $10,000,000 for a new children's medical center in Boston was announced by *J. W. Farley,* President of the Children's Hospital board of trustees. In this center will be included a new 12 room dental clinic utilized for public health teaching and care of healthy children as well as those sustaining definite diseases.

Dr. Joseph Volker, Professor of Clinical Dentistry at Tufts Dental School, has sailed for Czechoslovakia under the sponsorship of the medical teaching mission of the Unitarian Service Committee. He will spend the summer lecturing and making hospital rounds.

If you like this column personal, but not confidential, why don't you send *your* news to the writer? Only four communications were received for this issue, three of which were forwarded from *Editor Al's* desk. If "Grandma" falls down, or you managed to get away from your office a few days, why don't you let me know? Just *Ithaca, Michigan.* No street address is necessary, and my phone number is one (1). I read my own mail and dictate my letters so don't be afraid to WRITE the news as you know it.

Stanley C. Brown,

Ithaca, Michigan

The Political Machine Behind the W-M-D Bill

Representatives of the medical profession from Colorado and several adjoining states gathered recently in Denver to hear a talk by Marjorie Shearon, Ph.D., upon the threats now besetting the practice of medicine as we know it today. Dr. Shearon is from Washington, where she is Research Analyst for the Conference of the Minority, United States Senate. Her years of experience in matters of social, economic and medical affairs of national importance, her intimate knowledge of political personalities, maneuvers and tactics, qualify her to speak as an expert; her frankness, fairness and impartiality are familiar to members of our profession who have long had a profound interest in these vital problems.

Wisdom and sincerity characterize her speech and writing. Believing that the greatest possible publicity upon the character and motives of its perpetrators will be required to defeat the Wagner-Murray-Dingell Bill, we present here a digest of a portion of her talk. The regular medical profession since the beginning of World War II has been seriously disarmed incidental to absence of thousands of doctors in the armed forces and by the over-whelming burden which fell upon those remaining at home to fulfill the demands of civilian practice. It would have been surprising had the opportunities among our opponents not taken advantage of this opening to gain political power and prestige, nurse a grudge against the medical profession, attain a permanent and lucrative "job" for themselves and their stooges, and to justify and expand assignments and responsibilities incidental to important-sounding titles.

We all need this information, particularly those now returning after three or four years of patriotic service. We all must know the forces which would cause our country to repeat the mistakes of other countries where socialization of medicine has ruined the inspiration for progressive practice and where its quality has deteriorated as its cost has increased. All of us must think, speak, write, work, and tell the voters the truth—if we are able to save our profession in America! The critical time is now, not after the mistake is made. There are forces without and within organized medicine which must be met. Let us abruptly face the facts.

Isidore Sidney Falk, Ph.D., heads a machine to nationalize medicine. He is of foreign extraction, born in 1899, educated at Yale following which he taught at the University of Chicago for five years. Those who know him well describe him as brilliant, a hard and industrious worker and "clever as hell." He manipulates statistics to "prove" that which furthers his aims and desires. False claims regarding his "cure" for influenza led to his being fired from the University of Chicago and to his grudge against the medical profession. Dr. Falk then became the Director of Research for the Committee on Costs of Medical Care.

Thus he has become classed as an "expert" on the basis of data which is out-dated (if ever creditable) and some of which has been redated with obvious ulterior motives; he is one of the "overnight experts" readily available on any subject and in any field. He left the committee in 1933 and joined the Milbank Fund, associated with the since-deceased Director of Research. In 1935 he was given a year's leave of absence with pay and did a superficial job on European sickness insurance survey. And, of course, he wrote a book. Unfortunately, many of the fools who aspire to write a book ultimately do so; thus an expert may be created in less than overnight.

The way was then paved to a position on the Social Security Board, even if it was in a minor capacity at first. But in 1940, four men ahead of him disappeared and Falk became Director of Research and Statistics—in perfect keeping with his sleight-of-hand manipulations. Here he kept health studies cornered. His Director of Economics was a benign-appearing woman whose equipment got her

in places where his own was less appropriate; she gets for him the kind of "statistics" he desires. Another woman on his staff has been assigned to "bring along" the labor group, some of which are joining the forces who want to nationalize medicine. She prepares speeches and testimony for the labor people. All of Falk's original staff have resigned because they won't be parties to his type of dealing, but there remain some lesser lights in the fringe of his orbit. They comprise a skillfully managed team of several dozen people who know their jobs and who do the will of their boss like trained animals. Regular research is quashed and workers do and find what their chiefs direct.

The Surgeon General of the United States Public Health Service was double crossed in 1939 when medical provisions of the Wagner Bill were subversively shunted to the Social Security Board. Falk smoothly altered it his way, and Dr. Parran has no illusions about him. In 1943 Falk fooled Parran again. Two new medical bills were prepared by Falk's outfit which claimed that the bills were only in the "study stage," and there was no immediate action brewing. But they had their case ready to spring. Next day a full-grown bill was introduced, the 1943 version of the Wagner-Murray-Dingell Bill, and the Surgeon General hadn't even seen it. Later on, Dr. Falk went through the motions of confiding in the U.S.P.H.S., and it is the job of one of his staff members to act as a go-between with it and the Social Security Board. Similarly, Falk went through the motions of confiding in nurses and dentists—all, of course, for the purpose of aligning them on his side. Sadly we note that Dr. Parran has now joined the collaborators; he has sold out the medical profession; the screws were put on him and he yielded; he has done what he thinks his administration wants him to do. And thus a seven-billion-dollar insurance scheme may pass!

If it should pass, the plain fact is that the Social Security Board, with Falk the power behind that particular throne, would dictate to medicine in the United States. It would, by regulation, directive, and edict, control every act of every physician, dentist, pharmacist, nurse *and every patient.* It would, after a few "introductrination years," control almost 25 per cent of the national income. This would be a tremendous step toward the totalitarian state. Call it national socialism, fascism, nazism, communism, or what you will, they all lead to the same thing. It has been officially noted in a Canadian study of European sickness insurance that during the early years of Hitler's regime, the German government's medical program was looked upon by many as one of the greatest props of the totalitarian state.

Politically the scheme appeals to some members of Congress as a means of raising money; it appeals to labor leaders because it gets votes. Since Falk is tireless and energetic, nice young U.S.P.H.S. men find it easier and more peacable to let him have his way. The Doctor tells the world that some fifty other countries have "arrived" at this means of fulfilling their health requirements, but we are "coming along" and none of our difficulties are insurmountable. This is characteristic of his honeyed and perverted sales talk.

Dr. Shearon quoted a modern definition of democracy: "the greatest good for the greatest number—whether they want it or not." And in this democracy, while thousands of us were out of the country caring for the men defending it, and other thousands carried the load at home to back up the fight, this is what happened. Falk and his gang were lining up a job and a future for themselves, *not* for the benefit of the people of America.

This, gentlemen, is the way it stands; we have pointed out the enemy of our profession and of the American way to practice it.—Editorial, *Rocky Mountain Medical Journal,* April, 1946.